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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Hyung Joo Kim

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EXAMINER

MARTIN, PAUL C

ART UNIT

PAPER NUMBER

1657

MAIL DATE

DELIVERY MODE

06/18/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/509,718

Applicant(s)

KIM ET AL.

Examiner

Paul C. Martin

Art Unit

1657

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 6-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

Claims 6-11 are pending in this application and were examined on their merits.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The objection to Claim 2 because of minor informalities has been withdrawn due to the Applicant's amendment to the claims filed 4/3/07.

The objection to Claim 2 under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been withdrawn due to the Applicant's amendment to the claims filed 4/3/07.

The rejection of cancelled Claims 2 and 4 under 35 U.S.C. § 112, 1<sup>st</sup> paragraph as failing to comply with the written description requirement as it applies to newly submitted Claims 6 and 9 has been withdrawn due to the Applicant's amendment to the claims filed 4/3/07

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The rejection of cancelled Claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Evans *et al.* (1998) in view of Kim *et al.* (US 5,976,719) is maintained for reasons of record set forth in the prior action as it applies to newly submitted Claims 6, 7 and 8 as necessitated by Applicant's amendment filed 4/3/07.

The rejection of cancelled Claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Evans *et al.* (1998) in view of Kim *et al.* (US 5,976,719), Nakamura *et al.* (US 5,160,604) and Shedd *et al.* (US 6,058,763) is maintained for reasons of record set forth in the prior action as it applies to newly submitted Claims 9, 10 and 11 as necessitated by Applicant's amendment filed 4/3/07.

New Claims 7, 8, 10 and 11 are drawn to a method wherein electrochemically active microorganisms generate an electrical signal change in the presence of Cr<sup>6+</sup>, mercury (Hg), Lead (Pb) or phenol.

Evans *et al.* teaches a method for detecting toxic materials in wastewater samples using electrochemically active bacteria by introducing an activated sludge containing electrochemically active bacteria onto an anode electrode to form an enrichment culture (Pg. 449, Column 1, Lines 1-12), which generates and electrochemical signal and determining the electrochemical signals generated from the microbial biosensor after addition of *p*-benzoquinone mediator (Pg. 449, Column 1, Lines 13-35), introducing a wastewater sample containing 3,5-Dichlorophenol to the electrochemically active bacteria into the biosensor and determining the degree of electrochemical signal changes from the biosensor after introducing the water sample to the biosensor (Pg. 449, Column 1, Lines 35-40 and Pg. 450, Fig. 2 and Pg. 451, Fig. 3).

### ***Response to Arguments***

Applicant's arguments filed 04/03/07 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). While the cited references may differ from the claimed invention in terms of the details found in the specification, the instant invention was examined based upon the claims which were interpreted in the broadest, reasonable manner.

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One cannot argue non-obviousness based upon unclaimed features as compared to the prior art. For example, Applicant argues that the Evans *et al.* reference is characterized by a three electrode system including a reference electrode, a counter electrode and a working electrode immobilizing an activated sludge or lyophilized activated sludge to the surface of a working electrode with an Anopore fixed-microorganism membrane uses p-benzoquinone as a redox mediator and discloses a plurality of different biosensors (Remarks, Pg. 5, Lines 17-29). Further, Applicant argues that Evans *et al.* is directed toward batch mode and not suited for automated continuously monitoring water quality and detecting pollution and differs from the instant invention with respect to cathode design (Remarks, Pg. 6, Lines 17-28).

The Applicant's arguments are not found to be persuasive for the following reasons, the obviousness-type rejection was based on the combination of two references as applied to the broadly claimed method steps. The fact that the Evans *et al.* reference does not exactly resemble the instant invention in specific cathode design is not suitable evidence of non-obviousness. Further, Applicant's suggestion that the Evans *et al.* reference is not suited to continuous automated monitoring is not found to be persuasive as this limitation is not explicitly claimed.

Even if it were specifically claimed however, the rejection would be maintained as the MPEP states:

*In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958) (Appellant argued that claims to a permanent mold casting apparatus for molding trunk pistons were allowable over the prior art because the claimed invention combined “old permanent-mold structures together with a timer and solenoid which automatically actuates the known pressure valve system to release the inner core after a predetermined time has elapsed.” The court held that broadly providing an automatic or mechanical means to replace a manual activity which accomplished the same result is not sufficient to distinguish over the prior art.).

In a similar manner, the Applicant argues that Kim *et al.* lacks components of the instant invention such as a sample inlet pump, a microbial fuel cell, a pretreatment tank, means for measuring electrochemical signals between the anode and cathode, a Personal Computer, controlling part which controls the value of signals and automatically determines toxicity of the water sample, a solenoid valve, etc (Remarks, Pg. 7, Lines 13-27).

As stated above, the Applicant's arguments are not found to be persuasive for the following reasons, the obviousness-type rejection of Claim 2 and applied to new Claim 6, was based on the combination of two references as applied to the broadly claimed method steps. The fact that the Evans *et al.* reference does not exactly resemble the instant invention in specific cathode design is not suitable evidence of non-obviousness. The claimed components do not appear in Claim 6, but rather in Claim 9 and were addressed by the Nakamura *et al.* and Shedd *et al.* references.

Applicant argues that Nakamura *et al.* teaches a water toxicity detecting device which uses different microorganisms than the primary reference and different detection means and is therefore different from the instant invention in terms of constitution (Pg. 8, Lines 1-15).

Applicant's arguments are not found to be persuasive for the reasoning provided above regarding the combination of references and non-claimed limitations, the Nakamura *et al.* reference was brought in solely to address the deficiencies of the primary references which lacked devices featuring a water sample inlet pump, first pre-treatment tank, Personal Computer and controlling part.



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The Applicant argues that Shedd *et al.* is directed to an apparatus in which water quality is judged based on the behavior and health of fish, is ambiguous and not suited for quantitative analysis, that the primary reference and Shedd *et al.* are completely different biosensors and one of ordinary skill in the art would have not reason to combine them (Remarks, Pg. 8, Lines 16-27).

The Applicants arguments are not found to be persuasive for the reasoning provided above regarding the combination of references and non-claimed limitations, the Shedd *et al.* reference was brought in solely to address the deficiencies of the primary references which lacked devices featuring a solenoid valve and a sample gathering tank.

### ***Conclusion***

No Claims are allowed.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul C. Martin whose telephone number is 571-272-3348. The examiner can normally be reached on M-F 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon Weber can be reached on 571-272-0925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Paul Martin  
Examiner  
Art Unit 1657

6/6/07

A handwritten signature in black ink, appearing to read "Jon Weber", with a large, stylized loop at the end.

**Jon Weber**  
**Supervisory Patent Examiner**